The Arboretum Bulletin

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Attention of Members

TWO important matters should be called to the attention of the membership:

(1) The Arboretum Foundation office, 4420 White Building is open from 8:00 a. m. to 12:00 noon, Mondays through Fridays. In case of necessity, Miss Grace Read, office secretary, may be reached during the afternoon at the office of the Arboretum director on the campus, Melrose 0630, Local 519.

(2) As we are planning on changing our membership filing system, please advise the office (Seneca 0920) if we have your name or address incorrectly listed. It is particularly important for garden clubs whose officers have been changed, to notify us of these changes so that the bulletin may be sent to the proper person.

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Inter-Relationship Between Foliage and Flowers

AT THE MEETINGS of the American Society for Horticultural Science, held during the week of June 17th at the University of Washington, there were a number of interesting things concerning plant culture that were brought to light. Dr. C. P. Harley of the federal department of agriculture office at Wenatchee, Washington, reported some timely experiments with apple trees, the results of which can be interpreted for most all ornamental plants as well. His studies were designed to throw light on the very intimate relationship that exists between the amount of leaves on a branch and the number of flower buds that can be formed. The results disclosed that it takes a certain minimum amount of leaf surface to provide the food materials that are needed for flower bud formation. If there are too few leaves present, only leaf buds will result. So intimate was this relationship that Dr. Harley was able to state that it required a minimum 59 square centimeters of leaf surface to bring about the formation of the flower bud. Expressed in another way, the experimenters discovered that, on those spurs (short fruiting branches on the apple) where two leaves were left, the flowers appeared on 2 to 7 per cent of the spurs, and where 3 leaves were left, 40 to 70 per cent of the spurs formed flowers.

The importance of maintaining ample, healthy foliage on all types of ornamental flowering plants is obvious from the results of the apple experiment. Every cultural detail that contributes to leaf development will also exert an influence upon the flowers. Insects and diseases, under- and over-watering, lack of sufficient fertilizer elements—all of these factors will have a bearing upon the amount and quality of the foliage and should therefore be taken into consideration. From time to time we shall discuss these individual factors as they relate to particular plant groups as well as to plants in general.

Sustained Care for Flowering Trees and Shrubs

ARE YOU numbered among those gardeners who desire beautiful, full-bloomed ornamentals *every* spring and who, as soon as the flowers have gone, immediately forget the plants until the next season? If you are, then you should carefully consider this question: At what time of year are the flower buds formed on our trees and shrubs?

For the sake of convenience the flowering trees and shrubs can be placed in one or the other of two groups—those that produce flowers on old wood of the previous season's growth and those that bloom on new wood formed in the current season. Most of our spring-flowering shrubs belong in the first group. The initial cells from which next season's flowers arise are laid down very soon after the blooms disappear.

Undoubtedly these initial or original cells have already been formed on many of our finest shrubs. These cells are dividing and building up right now the structure which will become next year's flower. Now is the time to take good care of these fine plants—to water them sufficiently, to keep down insects and diseases, and to fertilize them if your soil needs it. If you wait until next spring there isn't a great deal that you can do to improve the flowers. Proper care during the remainder of the summer and fall will largely determine your success. And if you haven't pruned these spring-flowering things yet it is not too late to thin them out. Proper thinning wherein you remove whole branches or stems will give you better quality flowers. More of the food materials will be thrown into the development of fewer inflorescences. One of the results often noticed is that the shrub will produce more flowers and bigger flowers per truss—an important thing in growing ornamentals around the home.

How early in the year do flower buds form? From work done at Wenatchee we know that next year's apple buds begin to form on or about July 8th.

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New or Otherwise Outstanding Ornamental Shrubs

By J. H. HANLEY

ONE of the obvious functions of an arboretum is to import, exhibit and report upon new types of desirable shrubs and trees that might otherwise be unknown or which might at least remain uncommon in the particular part of the country in which it is located. We have laid much stress on the fact that a properly organized arboretum can be of immense assistance in a number of ways to those who are interested in plants—to those who are interested in learning more about how to use plants and what cultural requirements are necessary to grow them, as well as to those whose

interests lie in the new and novel types. This spring we had some rather unusual ornamental shrubs which have given proof of their ability to grow well and flower abundantly here in the Northwest and which deserve a wider use.

Most prominent among the group of outstanding shrubs which performed so satisfactorily this spring is a lovely specimen of the genus Leptospermum. This particular plant came to us from the Bureau of Plant Introduction and, judging from its ability to adapt itself to our climate and soils as evidenced by its beauty this year, it should become a very popular landscape subject. The Leptospermums are evergreen shrubs and small trees. They belong to the Myrtle family, the group in which the Eucalyptus is found, and they come to us from New Zealand and Australia. At least seven species and varieties can be procured from nurseries in the United States.

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The Bureau of Plant Introduction has assigned to the specimen at the Arboretum the name Leptospermum ericoides. Whether or not this name is correct is open to question. No adequate description of the species ericoides is available at the moment and, although the identifications of the plant introduction bureau are ordinarily very reliable, it appears that the plant in question is probably another species, L. scoparium. The L. scoparium varieties are the most widely used kinds. Mr. John A. Grant reports that one of them, var. Nichollii, grows quite well in Victoria, B. C. A number of other species and varieties are in use in California.

The Leptospermums are all very floriferous. The shrub at the Arboretum was literally covered with masses of regular, small, dark pink flowers—thousands of them borne in the leaf axils along every branch. The crown of the plant is well-shaped, rounded and semi-compact. The branches and branchlets are thin and delicate looking, giving to the whole a graceful, fine-textured appearance.

Like so many of the New Zealand and Australian plants, Leptospermum seems to require rather warm, dry conditions. Conditions such as one provides for many of the Mediterranean species would seem ideal. It would not be wise to place Leptospermums in heavy, wet soil in a valley since these sites would prove too cold. A position nearer the top of a southerly or southwesterly slope would be much more amenable. And the soil should be provided with adequate drainage. Under conditions of this kind the Leptospermums should give a beautiful display of flowers during late May.

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Another plant that has performed beautifully this spring is a species of mock-orange or Philadelphus, also from the Bureau of Plant Introduction. To be sure, there are a great many shrub groups that are more satisfactory from the purely ornamental standpoint than is Philadelphus. But very few of these other groups will provide such a wealth of bloom with so little care. There has also been a decided improvement within the last ten years so that now one can procure a number of large-flowered types in both the single and double forms. Philadelphus, on the whole, is a very versatile, adaptable genus that can be grown under a wide variety of conditions, thus making it the more desirable for general landscape purposes.

The particular one referred to above is as yet unnamed. But it most certainly will become a popular thing after it has been released by the plant introduction bureau. Unlike most of the currently popular varieties which are double-flowered, this one is a single. But the flowers are extremely large, the petals being both long and very broad, and of the purest white. The flowers are carried in profusion over the whole of the loose, irregular crown—a habit of growth that lends itself well to naturalistic plantings.

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Two species of Deutzia are also included in this group of noteworthy plants—D. Wilsonii and D. setchuenensis corymbiflora. Both are of Chinese origin and both have very distinct and different qualities that warrant expanding usage in the garden and around our homes.

D. Wilsonii is a stiff, upright shrub attaining an ultimate height of six feet. So far as is known it cannot be purchased anywhere except in England. The three plants in our collection apparently are seedlings, since they exhibit rather extreme differences among themselves. These differences are most apparent in (1) time of bloom, (2) profuseness of flowering and (3) habit of growth. Of the three plants, one is particularly striking, principally because it produces such an abundance of flowers in rather elongated but large and well-filled, inflorescences. They are pure white and cover the plant so thoroughly that the leaves are scarcely visible. It should prove a welcome addition to our gardens.

In the case of D. Wilsonii, where one plant exhibits qualities that are far superior to the others, it is obvious that we shall propagate vegetatively from this one outstanding parent in order to secure the best possible collection of plants for the Arboretum.

Duetzia setchuenensis corymbiflora is not at all like D. Wilsonii. It is a graceful, arching shrub, four to five feet tall, with small, white flowers produced in loose, open inflorescences. At a distance it gives the effect of an attractive, gray mistiness. Because of its graceful outline and moderate height, it could be used to advantage if planted in front of evergreen trees. The evergreens would serve to accentuate the fine qualities of the shrub.

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Cotoneasters

By Walter J. Eyerdam

Ornamental shrubs of the genus Cotoneaster are much planted in the Pacific Northwest, because of their brightly colored and attractive fruits, their interesting growth habits and the spiraea-like flowers some species produce. Most of the Cotoneasters have fruits in various shades of red, although in a few species they are purple or black. These are mostly in the form of small pomaceous drupes crowned with persistent calyx-lobes with 2-5 stones. The color of the flowers ranges through various shades of pink to white, sometimes borne solitary and sometimes in few- to many-flowered corymbs. The leaves are evergreen or deciduous and range in size in the various species from less than 5 mm. in length in *Cotoneaster microphylla* var. *thymifolia* to 15 cm. in some of the largest leaves of *Cotoneaster frigida*. Most of the leaves range in the various shades of dark to light green, more or less pubescence, to pink or purple in some minor varieties of *Cotoneaster frigida*. The leaves are alternate, short-petioled, entire and generally with awl-shaped, deciduous, stipules.

The Cotoneasters range in size, shape and general character from trailing vines, prostrate, creeping shrubs with stiff branches, to pendulous branching or stiffly erect shrubs and small trees. The calyx-tube is mostly inversely conical, the sepals are 5 and rather short; petals are overlapping while in the bud and then upright and unfolding or spreading. There are about 20 stamens and 2-5 styles. The carpels are generally joined into one and are 2-ovuled.

The important points in the classifications of the species of Cotoneaster are in the character of branches, leaves, flowers, shape and color of fruits and the number of stones in the fruits. The name Cotoneaster comes from the ancient Greek and means literally quince-aster. Some species from Southern Europe have leaves resembling the quince. There are about 40 species and numerous varieties and subspecies in the temperate parts of Europe, Asia and North Africa. They do not reach Japan but have their center of distribution in Central and Western China, where they thrive in rocky regions at high altitudes. The genus Pyracantha, the firethorn, is a close relative of Cotoneaster and forms a link with the genus Crataegus of which there are over 800 known kinds in U. S. A. and Canada alone. They belong to members of the great rose family. The principal difference on the part of Pyracantha is the presence of thorns on the branchlets, thus coming in close relationship to the hawthorns or Crataegus.

Cotoneasters are of principal horticultural value as hedge, rockery and bank plants and the bright colored, though rather insipid berries form welcome food for wintering birds of many species. Most of the more than 50 species and varieties of Cotoneaster recorded at the Arboretum are only seedlings, but there are about 15 species that are large enough to produce flowers and fruit. Around Seattle, in many home gardens, front yards and small parks, are about a dozen species of Cotoneaster not yet represented at the Arboretum. Some of these are very desirable.

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A good rockery and bank species is the *Cotoneaster Dammeri* var. *radicans* with its trailing, often rooting branches and its attractive bright red berries and dark green glossy leaves. It is a native of Central China. Five other species and varieties of Cotoneasters from Western China are of prostrate habit and with small elliptic to obovate leaves make desirable rockery and overhanging or steep bank-dwelling shrubs. The largest of these is *Cotoneaster prostrata*, an evergreen shrub that reaches a height of 4 meters in its native state. With persistent trimming it can be kept at a desirable size. The species *C. buxifolia* and *C. microphylla*, with its varieties *glacialis* and *thymifolia*, are low, compact shrubs with very small, obovate or oval glossy dark green leaves, studded with white flowers in early summer and with bright scarlet fruits in the fall.

Cotoneaster horizontalis and the allied species *C. verruculosa*, *C. disticha*, *C. adpressa* and *C. rotundifolia* are deciduous or half evergreen shrubs with low forked branches profusely studded with pink flowers and later in the autumn and winter with bright red berries. These are amongst the most popular bank and low hedge Cotoneasters. One variety of *C. horizontalis* called *perpusila* has leaves that turn bright orange in the fall. It is a low spreading type. Another variety of *C. horizontalis* is trained to grow as a small tree with a crown of compact branchlets covered with shiny little evergreen leaves and bright red berries. The two species of *Cotoneaster horizontalis* and *rotundifolia* seem to be the most popular of the rockery and bank Cotoneasters. *Cotoneaster Simonsii* is perhaps the most attractive of the erect half evergreen Cotoneasters. Its long branchlets, covered with glossy green orbicular-ovate leaves interspersed with rows of large bright red shiny obovoid fruits, make it a favorite among many landscape gardeners.

Another species of similar habit is *Cotoneaster Francheti*. Its ovoid orange-red fruits and elliptic-ovate leaves make this species an attractive front yard shrub. The fruits have 3 stones. *Cotoneaster obscura* var. *cornifolia* has dark red to nearly black berries with 5 stones. The fruits become dark red in the autumn. They resemble closely certain fruits of the hawthorn. The leaves are elliptic-ovate. The fruit is broad pyriform and has generally 3 stones. Both of these species are native of Western China. The principal horticultural beauty of this species is in its pinkish flowers in dense 3-7 flowered cymes on short twigs. The leaves are deeply impressed and tomentose. It is quite uncommon in gardens but should become one of the favorites of the genus.

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There are many other species that are closely related to this one, but they do not have such dark fruits. *Cotoneaster nitens* is one of the few plants of the genus that has black fruits. It is a densely branched deciduous shrub with slender spreading branches and small shiny dark green leaves. It is a native of Western China. Some of the best leaved and bright red fruited Cotoneasters for high hedges are the species and varieties of *Henryana*, *salicifolia Hupehensis*, *multiflora* and *frigida*. Most of these plants produce cymes of densely clustered red berries which persist throughout the winter until early spring and are very attractive amongst the evergreen foliage. There are several types of *C. Henryana*, one of which is the variety *rugosa* whose leaves are bright green and delicately veined. It is a graceful weeping evergreen with orange red berries. This plant is more attractive when planted alone.

(To be continued)

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Darlingtonia Californica

By Gladys France Baker

DARLINGTONIA is not usually grown in the garden and yet I believe I have not another plant that attracts more attention. I have only one plant, which I grow in a tub sunk in the ground, as I have no bog garden proper. The soil in the tub was brought from a nearby swamp and has never been replaced or added to. This may be the reason my plant never shows any of the purple color that the wild plants sometimes have: its leaves are green and the appendages below the opening rather brownish in color with a few reddish spots, but it bears its odd purplish flowers regularly and appears to be in good health, though not as tall as its wild sisters. It is insectivorous in habit and probably does not get as many insects in my dry garden as it would in its native swamps. The leaves are its great attraction; they are curiously hooded and bearded, and if you want an unusual plant for a wet, shady poolside, I can heartily recommend Darlingtonia Californica.

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Acquisitions for May, 1940

1. Mr. W. H. Brown, Lake Forest Park—1 plant of Rhododendron coccinea speciosa.
2. Mrs. Tucker, Seattle, Wash.—1 plant of Tecoma grandiflora for use in Woodland Garden.
3. Mr. and Mrs. Reginald H. Parsons—1 plant of Osmanthus speciosa to be planted in honor of Mrs. Alexander McEwan.
4. Mrs. Loren Grinstead—84 seedlings of rhododendrons.
5. Mr. Dixon Vallance—8 varieties of roses.
6. U. S. Dept. of Agriculture—5 plants of miscellaneous species for trial.
7. Mrs. Jensen, Seattle—4 plants of Euonymous europeus.
8. Mr. O. Matthiesen, Seattle—1 crataegus sp.
9. Mrs. Don Palmer—Collection of plants of primula Wanda.

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